

**LEPIDOPTERA AT UVERNET, BASSES-ALPES, from 29th July to 8th September 1937.**

By WM. FASSNIDGE, M.A., F.R.E.S.

Uvernet is a tiny alpine village situated on the Route Nationale, No. 202, from Barcelonnette to Nice via the Col de la Cayolle. It is only four kilometres from Barcelonnette and lies quite near to the Route Nationale, No. 208, which passes above the village and leads to the Col d'Allos. A turbulent stream, the Bachelard, flows noisily in a southerly direction down the valley to join the Ubaye at Barcelonnette. Beyond Uvernet the valley narrows till torrent and road lie in deep sunless gorges; while lower down below the village the stream bed widens into a barren waste of stones and debris where grow willows and alders, with *Hippophaes* and many low plants, a stony river bed liable to be flooded after sudden storms in the mountains. Two rocky peaks—the Chapeau de Gendarme, 2681 m., and the Pain de Sucre, 2555 m.—tower above the village to the south-east, and nearly all the slopes and gorges are well wooded. Here we spent six weeks in the summer of 1937, devoting all our time to field work, lamping on every possible night, sugaring fairly regularly, kept indoors by thunderstorms on three occasions only during the six weeks of our stay.

Already we had observed that Lepidoptera were scarce this year both in England and France, and at Uvernet we found the same scarcity, though of course in such a rich locality the scarcity was only relative. The only butterfly that was plentiful from beginning to end of our stay was *Polyommatus damon*, Schiff. In fact, it can be stated at once that practically no butterflies were observed worthy of note. I was specially anxious to take *Erebia glacialis*, Esp., but two visits to the Col d'Allos yielded only two specimens captured and not many more seen. Even common butterflies such as *Argynnis pales*, Schiff. were very scarce, and only one specimen each of *Plebeius orbitulus*, Prun., *Parnassius delius*, Esp., and *Erebia ligea*, L. came to our notice. However, our interests lay rather with the so-called Micros, so that we did not feel too deeply disappointed.

At the very end of July *Aglaope infausta*, L. was found flying in the early morning sunshine around blackthorn bushes. This was our first acquaintance with the species, and Mr Burras, who spent some months at Uvernet and the Col d'Allos in 1936, had only taken two or three. We found that it flew from about nine till ten o'clock in the morning, and not a single specimen was ever seen flying or at rest later in the day. If a cloud obscured the sun, it settled low on grasses and twigs and could not be beaten out. It preferred the sheltered side of bushes and was hard to follow on the wing.

The commonest tree on the mountain sides is the Scots pine or a very closely allied species. It was curious to see large numbers of these pines almost covered with mistletoe from the very top of the trunk to the lowest branches. No less interesting was it to find in the mistletoe leaves fair numbers of the bladdery mines caused by the larvae of *Argyroploce woodiana*, Barr., a Tortrix that is supposed hardly to occur outside Britain. Two specimens of the moth were captured at light by Mr W. Parkinson Curtis at the end of July, and I have received this

year 1938 a number of mined leaves from a friend in Barcelonnette, from which I have bred a long series from this first recorded French locality.

Except *Dendrolimus pini*, L., which came freely to our lamps, hardly any other species of pine-feeding Lepidoptera were seen, but one such species caused us to make the inevitable error to which all field workers are liable when cut off from their collections and literature. A species of *Thaumetopoea* that we rashly assumed was *T. pityocampa*, Schiff., came occasionally to our lamps, and was left to buzz about on the sheet. I took two specimens at last, feeling vaguely that there was a difference somewhere, and found later that I had taken for the first time *T. pini-vora*, Fr. For an account of this species see *Amateur de Papillons*, 1926, Vol. 3, p. 31, and Plate 8. Such incidents make one wonder how many species may have been overlooked in similar circumstances.

Uvernet itself is not specially high—only 1269 metres above sea level—but in three hours one may climb to the foot of the Pain de Sucre or to the high pastures above La Maure; or one may catch the motor 'bus and do the climb up to the Col d'Allos, 2243m., without any effort in something over an hour. Naturally we went several times to these higher alpine hunting grounds but with small success. The season had been an early one and many species were either over or worn to rags even at 7000 feet. Numerous common high alpine species were not seen at all. However, a few *Psodos chalybaeus*, Zerny, were taken on the shaly slopes at the Col. d'Allos, flying in company with *P. canaliculata*, Hoch. (= *trepidaria*, Hb.) and *E. glacialis*, while near by in a swampy depression flew a few worn *Crambus uliginosellus*, Zell., indistinguishable from New Forest specimens. A few *C. furcatellus*, Zett., and a single *C. zermattensis*, Frey var. *muller-rutzi*, Wehrli, almost completes the tale of our captures at higher altitudes. Along the footpath from the Col and on the far slopes towards the village of Allos, where in 1936 Mr Burras saw myriads of insects, this year on the 3rd August there were hardly any at all, in spite of good weather and abundance of flowers. After a few attempts we abandoned the heights and paid more attention to the lower slopes and to the river bed.

On the western slopes of the valley among the pines are scattered bushes of juniper, and in many of them were swellings and mines caused by the larvae of *Synanthedon spuleri*, Fuchs. Though not common, the species is widely distributed in the district. In the river bed towards Barcelonnette, where it spreads out to a mile or more in width, grows abundantly *Hippophaes rhamnoides*, some old stems being as thick as a man's wrist. On this plant we found a good number of larvae of *Celerio hippophaes*, Esp., and in the twisted shoots small larvae of *Peronea hippophaeana*, Heyd. While searching for these two species on 13th August my attention was drawn to a broken dead twig still hanging from the stem which reminded us somewhat of the mine of *Synanthedon flaviventris*, Stgr. Signs of an Aegeriid larva in the broken-off dead piece were clearly visible and the nearly full fed larva was soon exposed. Further search revealed large numbers of empty pupa cases projecting from exit holes chiefly in the thickest stems. So fresh did these pupa cases appear that search was made for the perfect insect in flight around the bushes, but without success. A great deal of time was devoted to the search for larval mines of this Aegeriid, for

no species was known to feed in the stems of *Hippophaes* so far as we could remember. Fortunately, a strong keyhole saw could be borrowed, and as the result of prolonged searching and much labour a considerable number of larvae was obtained. For the benefit of future seekers the advice is tendered to go equipped with really strong leather gloves, for the writer's hands got very badly torn, and one persistent thorn remained in the joint of his left forefinger until 18th November. These mines may be found in stems of any thickness from three-eighths of an inch upward, and in any part of the plant. Quite often they are at ground level or even in the roots, when the frass upon the ground betrays them; but they also occur freely up to six feet above the ground. The larvae of two species of longicorn beetles were also found feeding in the *Hippophaes* stems, but their frass is easily recognised. The stem above the mine is often killed and then withering leaves betray the presence of the larva. Moths duly emerged quite freely from the end of May 1938 in the forcing cage, and at the end of July 1938 in the open. The species appears to be *Paranthrene tabaniformis*, Rott., which usually feeds on some species of poplar.

Sugaring on the score or so trees and posts near the village yielded only large numbers of *Catocala*: *C. nupta*, L., *C. elocata*, Esp., *C. puerpera*, Giorna, *C. optata*, Godart, all commonly, with a few *Antitype polymita*, L. But lamping was a real pleasure and all our best captures were made at light. At first we used to sally forth to likely looking spots in the vicinity, though Mr Burras had urged us to lamp from the dining-room window facing west and overlooking the torrent. We had good results outside on favourable nights, but would find on our return that Mme. Lorenzi, our hostess, had set a petrol lamp on a table at this window, and that large numbers of insects were awaiting our examination. For some reason or another insects came far more freely to a light at this window than they did to a light at our bedroom windows or anywhere outside. A few of the rarer species taken at light were: *Lemonia taraxaci*, Esp. ♂♂ only, *Euxoa birivia*, Schiff., *Tholera cespitis*, Schiff., *Mythimna oxalina*, Hb., *Euxoa vitta*, Esp., *Atethmia xerampelina*, Esp. var. *unicolor*, Stgr., *Acrionicta strigosa*, Schiff., *Synedo cailino*, Lef., *Gnophos daubearia*, Boisd., *Tephronia sepiaria*, Hufn., *Eupithecia breviculata*, Donz., *Sarrothripus degenerana*, Hb., *Cochliotheca crenulella*, Bruand, *Rebelia surientella*, Bruand, *Psorosa alpigenella*, Dup., *Euzophera pinguis*, Haw., *Anerastia lotella*, Hb., *Actenia brunnealis*, Tr., *Epischnia illotella*, Zell., *Orneodes desmodactyla*, Zell.

One of the characteristic plants of this locality is *Artemisia camphorata*, which I do not remember to have seen elsewhere in the Alps. Flying around this plant we took in early August a single specimen of *Cucullia cineracea*, Frr., but late in the month and in September large numbers of the larvae of this species were to be found at dusk and later, feeding on the flower spikes. When brought to England these larvae refused to eat *A. vulgaris* and *A. maritima*, but a certain number formed cocoons before our departure and emerged in July and August 1938. Our observations on the foodplant of this species fully confirms the note in *Amateur de Papillons*, Vol. 8, p. 250, 1937. On the same plant were found also numbers of larvae of *Phlyctaenodes aeruginalis*, Hb., feeding in a loose silken web. These

larvae remained unchanged throughout the winter and spring, but unfortunately they died before they could pupate.

Altogether about three hundred and fifty species of Lepidoptera were observed during our stay, some of which have still to be identified. A number of others have been bred since our return, among them *Arctia casta*, Esp., *Miselia dysodea*, Schiff., *Anepia irregularis*, Hufn., *Coenotephria berberata*, Schiff., *Tischeria angusticollata*, Dup., *Gracillaria cuculipennella*, Hb., *Phyllocnistis saligna*, Zell., *Peronea hastiana*, L. Enough has been said to show that this locality is a very rich and varied one, and it is certain that any entomologist, who could spend some time there in May, June, or July, would be well rewarded.

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### CONTINUOUS BREEDING. I.

By H. B. D. KETTLEWELL, M.A., M.B., B.Chir.

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The field for scientific breeding of Lepidoptera in this country is still widely open for investigation, because with the exception of a few varieties in such species as *Arctia caia* and *Abraxas grossulariata* and certain melanics, the majority have not yet been systematically worked out.

E. B. Ford in his genetic treatise on "Problems of Heredity in the Lepidoptera" [*Biological Reviews*, Vol. 12, 1937, p. 462] states:— "Although I do not claim that all the genetic factors which have been studied in the Lepidoptera are recorded here only a small proportion of them is likely to be omitted." Nevertheless, out of a list of two thousand species of moths and butterflies occurring in this country, under sixty species are referred to by him! From such an authority this goes to show how great is the field left open for investigation. The reason for this surprisingly small list must be found in the following two factors:—

- (i) The ease with which "continuous breeding" can be undertaken is at present limited to comparatively few species.
- (ii) The range of so-called varieties is greater and more obvious in those species already worked.

Of these two factors the first is undoubtedly the more important.

I should like here to make clear the difference between merely breeding a species for a generation, which may be easy, but from a genetic point of view may be a small fraction of a very long story, and "continuous breeding" which is essential in working out a given variety. This second type of breeding is obviously more difficult than the first, as it involves one's ability to get fertile pairings as well as other complications such as wintering the species in some stage or other.

For example, it is the easiest thing in the world to pair *Parasemia plantaginis* and breed from the egg a second generation of the species, but here the family tree comes to an abrupt end, the reason being that at present we find this species very difficult to hibernate in captivity in the larval state as it does in nature. For this reason the genetics of all the varieties of this species are incomplete and even its common northern variety *hospita* has, to the best of my belief, not been bred for more than the one generation.

Approaching the same subject from another point of view with the idea of stressing that the future of forming collections must lie more and more in the scientific breeding of all species. If we look over the average standard collection of Lepidoptera we are bound in all fairness to admit that the same series is reduplicated in a hundred collections. Now and then we see a variety of a species taken wild by some means or other. Unseen in these series and infinitely more common [exactly how much more common the genetic pundits can tell us] lie those specimens which carry the strain of one variety or other—the so-called heterozygotes which if bred together would produce the requisite quota of the particular variety (= homozygote). With few exceptions at present known these heterozygotes are identical with the type and therefore cannot be picked out.

Carrying the argument one step further, every insect taken, and this applies most to those species which show large range of varieties, may potentially be heterozygous to some variety or other and as such is worth breeding and in breeding from. By this means we can do in captivity what rarely could happen in nature.

By this means also we can do in captivity what never could happen in nature. I refer to the cross-pairing of species showing marked geographical variation, East with West and North with South, producing the consequent diversity of forms in subsequent generations.

Lastly by continuous breeding it is possible, in certain species only, by selection of light or dark forms to eliminate or add certain factors in one direction or another with the production of even darker or lighter forms. This is called multifactorial heredity and is, of course, quite distinct from the simple mendelian type of heredity in which only two factors are concerned and which is clear cut with no intermediates. As an example of this we may mention the black, *atra*, form of *Lymantria (Psilura) monacha* or the radiated forms of *Spilaretia lutea*.

It would seem, therefore, that the future for lepidopterists will lie in specialists, the same as there are, of necessity, in every other branch of science, whose aim will be to work out a survey as it were of individual species not only by pure collecting but also by continuous breeding throughout the whole range of the species, as Goldschmidt has done with *Lymantria dispar*. Apart from the scientific knowledge gained, this would avoid the fatuous repetition which at present occurs in collections in our attempt at completion of the whole which, of course, is impossible in the lifetime of any one of us.

It is these thoughts which have prompted me to write up "Continuous Breeding" notes of these few species, which I have for the past few years been working on, hoping that it will help others. For it is extraordinary how after breeding the same species year after year simplifications and modifications will suddenly present themselves.

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### HERESY MOST FOUL

By AN OLD MOTH-HUNTER.

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I have got a bee in my bonnet. To the orthodox it is a ridiculous bee—nearly as stupid as those spelling ones which lately attacked, and stung, the B.B.C. It is this.

I hold that the scales on the wings of a lepidopteron, being attached to the wings by means of pedicels which fit into sockets in the wing membrane (Imms), cannot be blown off by the wind. Puff I never so hard through a glass tube not one scale can I remove from the wings of a living insect. I allege that not any wind known to Aeolus—not Boreas, Aquilo, Auster, Notus, Eurus, Africus—let alone Zephyrus; neither tempest, hurricane, tornado, nor typhoon—can detach scales from a lepidopteron's wings so long as that insect remains in the air.

It follows, therefore, that a Bath White, or a Queen of Spain fritillary, or a Long-tailed Blue, or a Clifden Nonpareil, which crosses the Channel or North Sea shortly after its eclosion, will arrive in England or Scotland, or wherever it first settles, in identically the same condition as that in which it left its native shores.

This hypothesis, of course, is heresy most foul, and it has all the weight of AUTHORITY against it. Time and again, in all the classic works on British lepidoptera, in the pages of *The Entomologist*, *The E.M.M.*, the "Record," the Proceedings of all the Entomological Societies, one comes across the orthodox statement—that a migrant which is in perfect condition, as fresh as paint, must, *de ipso facto*, have emerged from the pupa not very far away—must, in fact, be an Englishman (or Scotsman) born and bred. "Its fine condition," says Barrett (*E.M.M.*, xxv, 180) "forbids the idea that it can have *flown* any very great distance" (the italics are his own). And so say, and continue to say, all true brethren of the butterfly net and sugaring tin.

Mr F. W. Frohawk has no doubts whatever upon this subject. Again and again in his *Complete Book of British Butterflies* he proclaims his orthodoxy. "There is not the slightest doubt that several have been British born, as examples have been taken in perfectly fresh condition" (p. 99); "These were in the finest possible condition and had evidently bred in his garden" (p. 199); "Many of the specimens taken have been in very perfect condition, apparently freshly emerged" (p. 313); and so on.

Why, then, should I, an insignificant person whose opinions are of no interest whatever to anybody, make myself ridiculous by proclaiming this preposterous heresy?

The answer is just this—that I have been reading *The Migration of Butterflies* by Mr C. B. Williams for the *n*th time. And every time I read it my heresy swells within my bosom. "Practically nothing is known," says this very wise writer, "of the conditions or period of time in which butterflies get 'worn' or 'rubbed'; and any conclusion drawn from such evidence is unreliable in the extreme. I have captured specimens of *V. cardui* migrating through Cairo that were practically perfect, and yet it was impossible to believe that they had bred within four hundred miles. In the migration of *B. severina* . . . in 1928, the majority of the specimens were in almost perfect condition . . . Yet there is reason to believe that they had flown many hundreds of miles, and all from the same spot, as there is no known large area in the vicinity which contains their foodplant . . . Grossbeck notes that *A. argillacea* 'in fresh condition' was taken in New York in . . . 1911, yet the nearest cotton field was four hundred miles away and no other foodplant is known." Moreover in 1887 this same moth, *A. argillacea*, swarmed "fresh and unrubbed" at Ottawa—some 200 miles